Vuolas Electronics Oy Ltd.

Part No.	**Lift Audio 2**
Description	**Advanced voice announcer unit**
Hardware	**Rev. 1**
Software	**1.0**
Documentation	**User manual Rev. 1.0**

Vuolas Electronics Oy Ltd.
Kunnansarka 2
FIN-37150 Nokia, Finland
Tel. +358 (0)3 342 6900
Fax +358 (0)3 342 5800

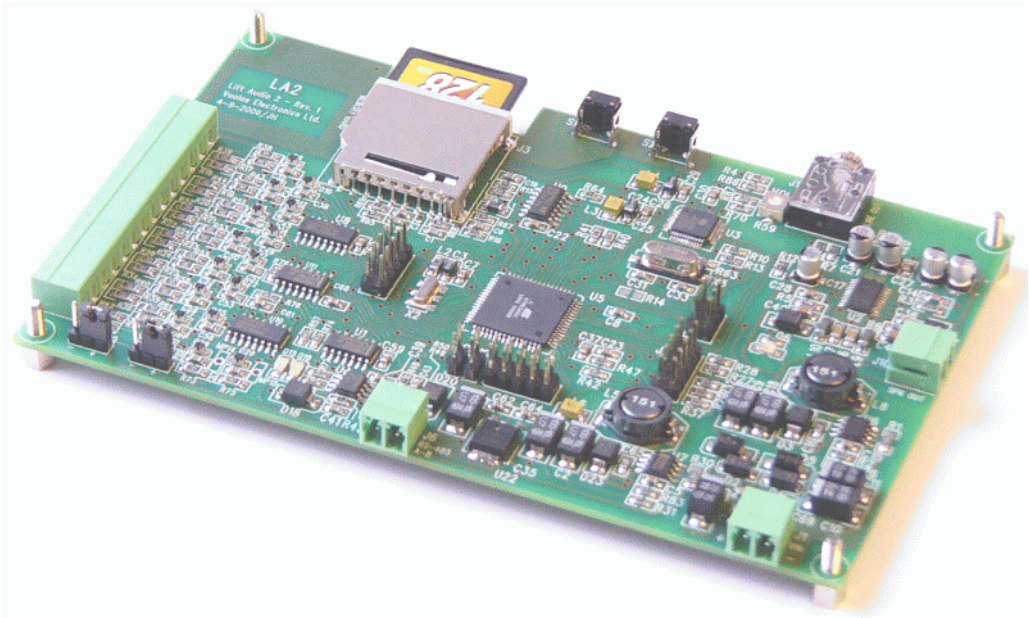
e-mail: vuolas@vuolas.com

Table of contents

Introduction 3
Features 3
Functional description 4
Electrical connections 4
Technical information 5
Electrical adjustment 5
Playing floor announcements 6
Playing special indications 6
Playing the music 6
Changing floor announcements 6
Device configuration 7
Mechanical assembly 8
Size and environment 8
Disclaimer & Copyright 8

Introduction

Lift Audio 2 is fully independent voice playback unit. It is capable of announcing floor markings and other possible special indications. There is also a possibility to play background music. The unit can be connected either to a typical parallel control interface or to a RS-485 based VEBUS interface. Advanced digital technology ensures high quality and natural voice reproduction. On board potentiometer can be used for sound volume adjustment. Default set of voice sample files includes 59 english samples spoken by female. Due to a standard detechable memory type it is easy to change voice samples for example to a different language or add new background music.



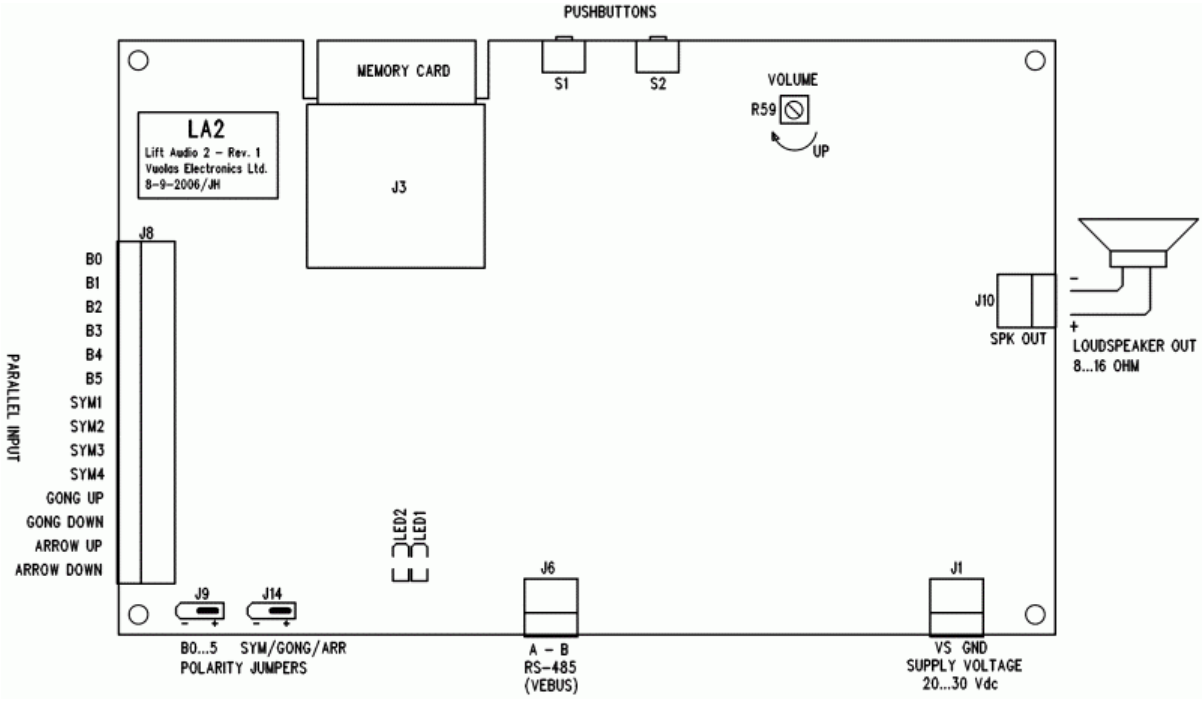
Features

- Primarily intended for lift applications
- Applicable for assembly either to the car or to a level
- Maximum number of floors is 32
- Enables high quality voice announcements of floor markings and special indications
- Voice announcement is played when gong or symbol inputs are triggered (or through VEBUS control)
- Standard flash memory type for voice sample files
    - Lots of space
    - Exchangeable
    - User can easily change or modify the voice sample files with PC computer (requires MMC memory card reader)
- Includes sample files
    - English, female
    - Used for creating the needed voice announcements
    - Numbers 0...9, letters A…Z, minus sign and three special indications
- Built in high performance audio power amplifier for driving external loudspeaker
- Adjustable loudspeaker volume
- Capable of playing background music

Functional description

Floor announcement is played when gong-up or gong-down signal is triggered. Device plays file from the memory card corresponding to the current floor code of parallel input or serial control packet. Special indications (symbol 1…4) will be played when the appropriate signal (SYM1…4) is active. Announcements have two priorities. Higher priority includes floor and symbol 1…3 announcements. Symbol 4 has a lower priority. Higher priority announcements will be always played completely. Lower priority announcements can be interrupted if higher priority announcement occurs. For example if symbol 4 is currently playing and floor announcement occurs, then symbol 4 playback is immediately stopped and floor announcement will be performed.

Electrical connections



- Power supply input (J1),
  - Operating voltage range, 20…30 VDC (max. 5% ripple voltage)
  - Current consumption, <100 mA @ 24 VDC (without loudspeaker)
- VEBUS connector (J6),
  - 2-pin serial communication interface
  - RS-485 compatible bus connections, 38400 bps
  - Protocol is developed and optimized for lift applications
- Parallel control interface (J8),
  - Internal pull-down or pull-up resistors depending on jumper settings (J9, J14)
    - Jumpers are set to match control signal polarity
    - Two jumpers to individually set polarity for parallel position status inputs and for the other control signals
  - Pull-down/-up resistance: 10 kΩ
  - Input voltage range: 0…30 VDC
  - Logical levels:

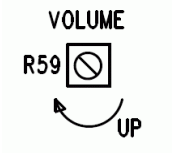
        - Logic 0: 0...1 VDC
        - Logic 1: 10...30 VDC
    - Maximum input current: ±3mA (depending on input polarity)
    - Symbol control inputs
        - 4 inputs for the symbol indications control
        - 2 inputs for the gong control (GONG UP, GONG DOWN)
        - 2 inputs for arrow direction control (ARR-UP, ARR-DOWN) ***not used***
- Loudspeaker output (J10),
    - Loudspeaker impedance: 8…16 Ω
    - Adjustable volume with trimmer R59
    - Recommended loudspeaker: 8Ω, at least 4" diameter, 10W power handling
- Optional stereo line output connector (J11) ***not installed***,
    - 3.5 mm stereo jack
    - for connecting to external audio power amplifier

Technical information

- Audio codec,
    - 16-bit DAC
    - THD+N: < 0.2 %
    - S/N: 81 dB
    - Supports MP3 and WAV file formats *(MP3 format recommended)*
    - Up to 320 kbps in MP3 format *(160 kbps recommended)*
    - Supports MPEG-1 and MPEG–2 Layer III (CBR, VBR, ABR)
- Audio power amplifier,
    - Maximum output power: 8 W @ 8Ω, 10% THD, 25˚C
    - Overload protection: current limit and thermal shutdown
    - 1-channel (left)
- Memory card,
    - Multimedia card (MMC)
    - 128 MB (*default)*, or up to 1 GB
    - Supports FAT12, FAT16 and FAT32 *(FAT16 recommended)*
    - Only for drives with 512 bytes per sector

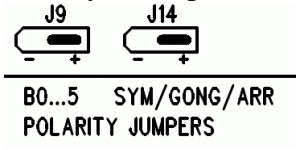
Electrical adjustment

Loudspeaker sound volume can be adjusted by trimming potentiometer R59 close to the text "VOLUME" on printed circuit board. Screwing potentiometer clockwise increases the sound volume. And counter-clockwise screwing decreases it. Default volume setting is made in factory. Use small screwdriver when adjusting volume, because the volume potentiometer is quite fragile.



Two jumpers should be set to match the input signal polarity. J9 is for the position status inputs and J14 for the others. When changing jumper positions, first disconnect the device

from power supply, then change the jumper positions and after that connect the device back to power supply. This is because the device automatically adapts to different input polarities by reading the jumper positions to memory when power is switched on.



Playing floor announcements

Device uses predefined filenames for announcements. Filename is attached to the floor code. For example if current floor code is 4, the device tries to find file "4.mp3" inside the memory card root directory and play it.

Floor code	File name for announcement
0	"0.mp3"
1	"1.mp3"
2	"2.mp3"
…	…
31	"31.mp3"

Floor announcement is played when either GONG-UP or GONG-DOWN input is triggered. For example when GONG-UP is activated, device reads the floor code. If floor code is 15, "15.mp3" is played.

If the file is missing, the voice announcement is not played. All the files used for announcing should be in root directory. Directory "\original\" includes back up of all voice samples.

Playing special indications

Special indications such as symbol 1...4 are played when the corresponding control signal goes to the active state. Special indication files are named "symbol1.mp3", "symbol2.mp3", "symbol3.mp3" and "symbol4.mp3".

Playing the music

All the background music files should be stored in memory card music directory (\music\). If background music feature is enabled from the device configuration file (ie. setup.txt), device automatically plays music when there are no announcements.
Background music settings are:

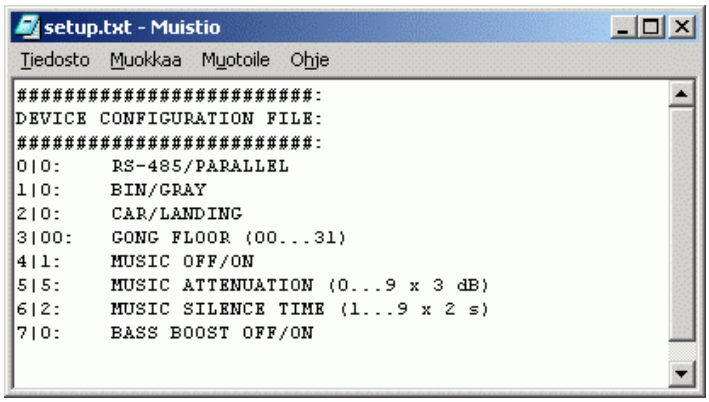
- Music off/on
- Music attenuation compared to announcement level
- Music silence time (ie. wait time for playing the next song after announcement)
- Bass boost off/on (+6 dB below 60 Hz) (* when enabled maximum MP3 bitrate is 160 kbps)

Changing floor announcements

To change or modify the files in memory card, you need a memory card reader, which supports Multimedia card (MMC).
Attention! Before removing or placing the memory card, first disconnect the device from power supply.
User can replace or rename files (0.mp3 .. 31.mp3) to make the correct floor announcement configuration.

Device configuration

The device is configurated using a file (ie. setup.txt) in memory card's root directory. The file is shown below:



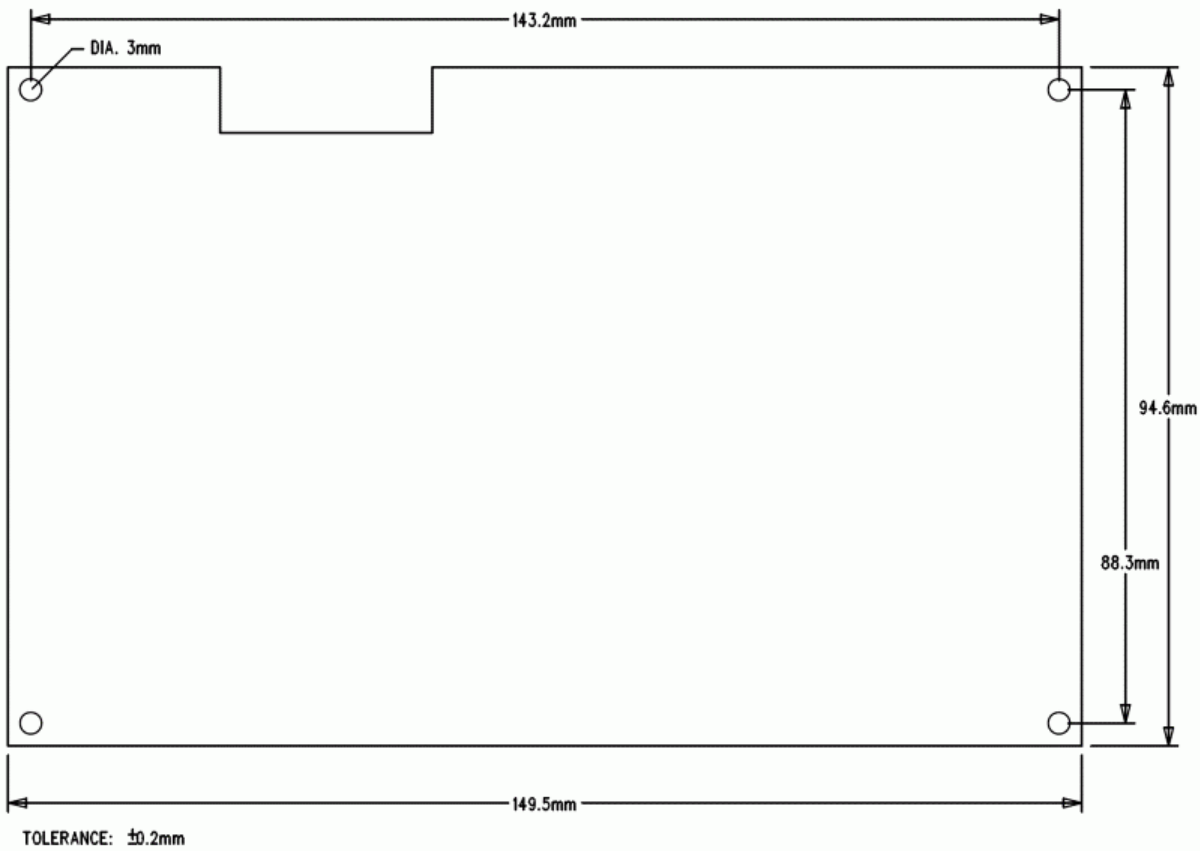
Each parameter row starts with index number and "|"-character. Parameter value is between reserved characters "|" and ":".

Parameter	*Value*	*Definition*
RS-485/PARELLEL	0 = RS-485 1 = parallel	Control interface selection.
BIN/GRAY	0 = binary 1 = gray	Parallel interface input coding. If RS-485 is used, this parameter has no effect.
CAR/LANDING	0 = car 1 = landing	Installation; in the car or on level.
GONG FLOOR	00…31	Installation level. Use always two characters when writing the value. If CAR-mode is used, this parameter has no effect.
MUSIC OFF/ON	0 = disabled 1 = enabled	Background music.
MUSIC ATTENUATION	0…9, 0 = 0dB, 9 = 27dB	Background music attenuation level in decibels is parameter value multiplied by 3.
MUSIC SILENCE TIME	1…9, 0 = 2s, 9 = 18s	Wait time for playing the next song after announcement. Time in seconds is parameter value multiplied by 2.
BASS BOOST OFF/ON	0 = disabled 1 = enabled	Bass boost control for announcement and background music.

Table 1. Parameter values in device configuration file.

Mechanical assembly

Device has 4 holes for mounting. Refer to separate mechanical drawings for accurate positioning of fixing points. Please consider space needed for cables and connectors (plugged connectors exceed the outline of the device).



Size and environment

- Physical dimensions: 149.5 mm x 94.6 mm x 13 mm (+additional space for connectors)
- Tolerances: ±0.2 mm
- Weight: 70 g
- Operation environment:
  - Temperature: 0…70 °C
  - Dry environment, RH: <85% (no condensation)
  - Not to be used in wet, moist or dusty environment

Disclaimer & Copyright

Vuolas Electronics reserves the right to change the product, its functions and/or specifications without notice.

Copyright© 2005 Vuolas Electronics Oy Ltd. All rights reserved.